FIG.1

(PRIOR ART)

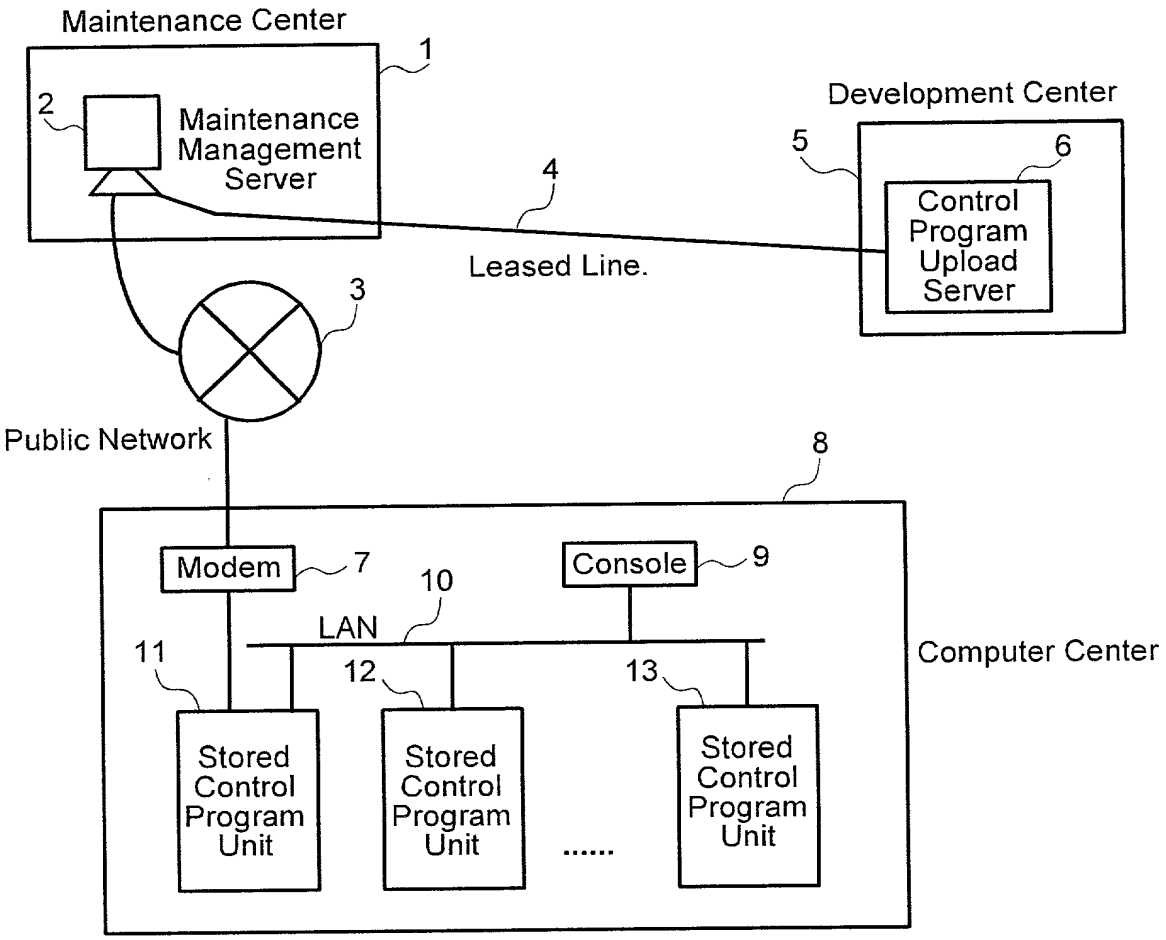


FIG.2

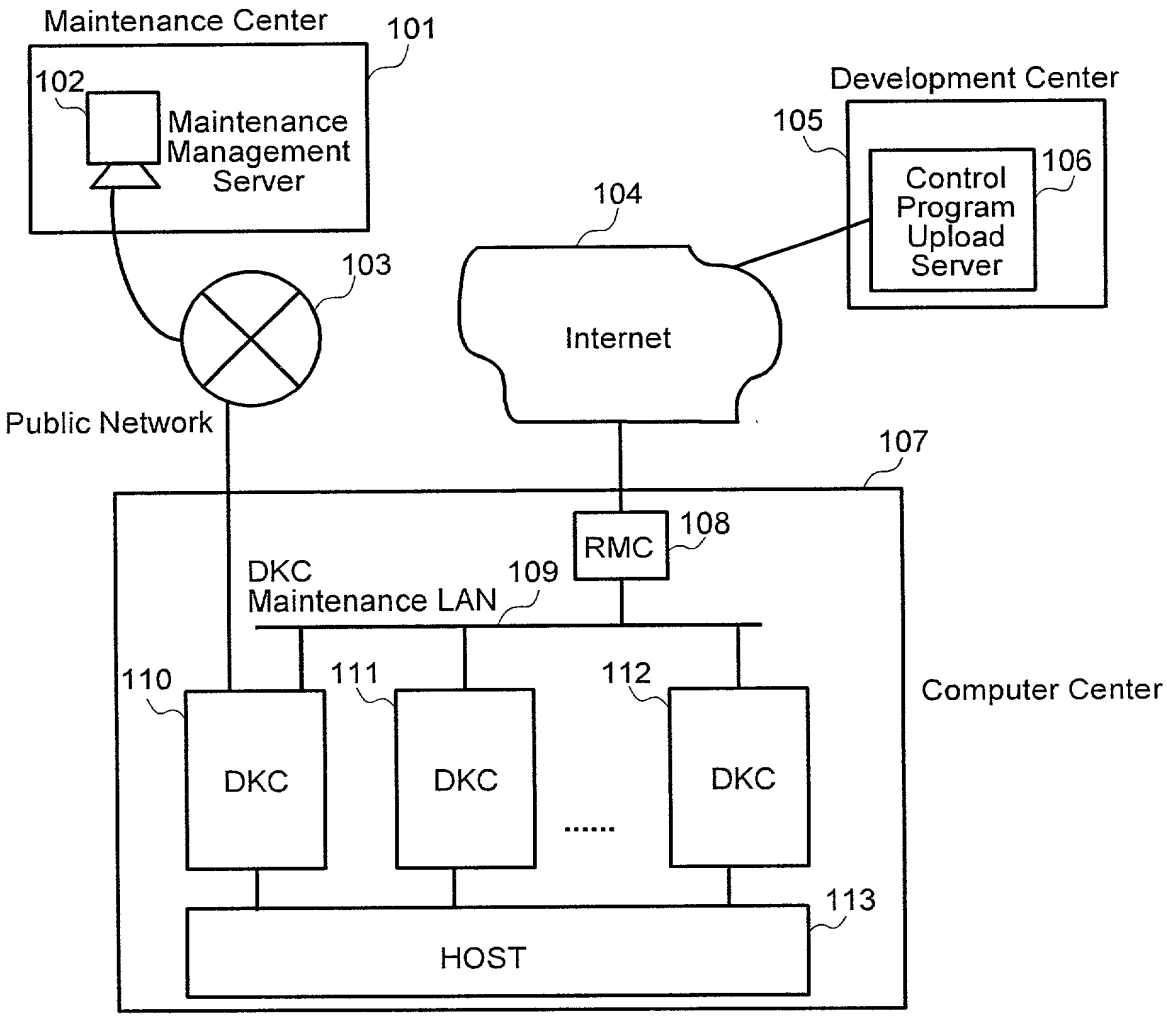

Maintenance Center
101
102
Maintenance Management Server
Development Center
105
106
Control Program Upload Server
104
103
Internet
Public Network
107
RMC
108
DKC Maintenance LAN
109
110
111
112
DKC
DKC
DKC
.....
Computer Center
113
HOST

FIG.3A

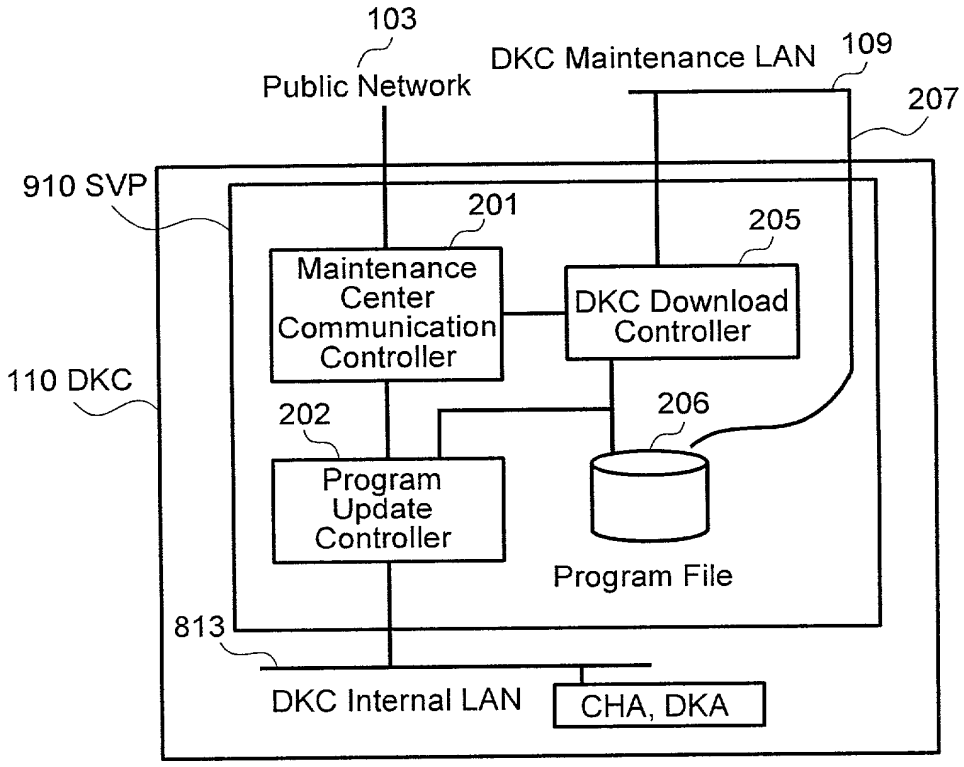

103
Public Network
DKC Maintenance LAN
109
207
910 SVP
201
205
Maintenance Center Communication Controller
DKC Download Controller
110 DKC
202
206
Program Update Controller
Program File
813
DKC Internal LAN
CHA, DKA

FIG.3B

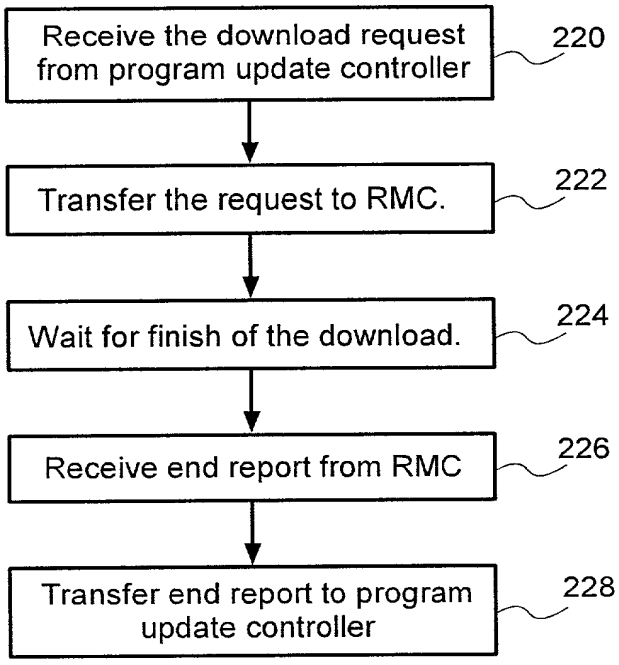

Receive the download request from program update controller
220
Transfer the request to RMC.
222
Wait for finish of the download.
224
Receive end report from RMC
226
Transfer end report to program update controller
228

FIG.4A

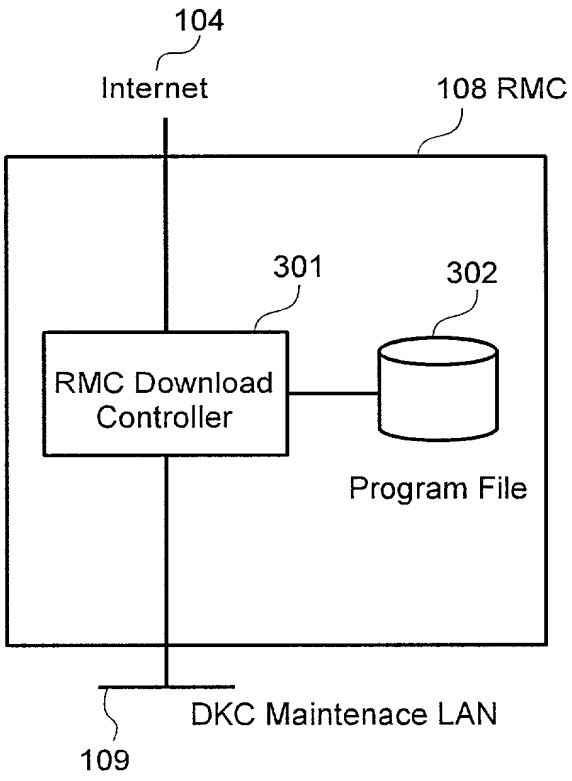

104
Internet
108 RMC
301
302
RMC Download Controller
Program File
DKC Maintenace LAN
109

FIG.4B

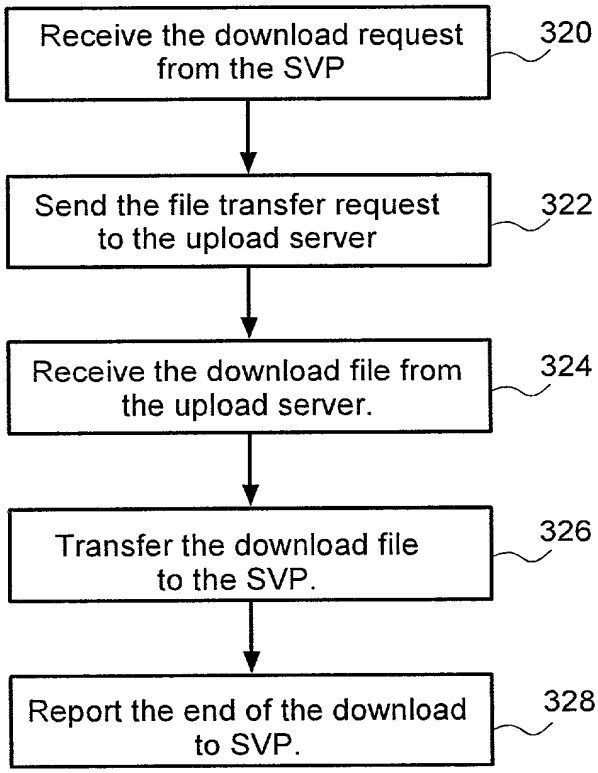

Receive the download request from the SVP
320
Send the file transfer request to the upload server
322
Receive the download file from the upload server.
324
Transfer the download file to the SVP.
326
Report the end of the download to SVP.
328

FIG.5

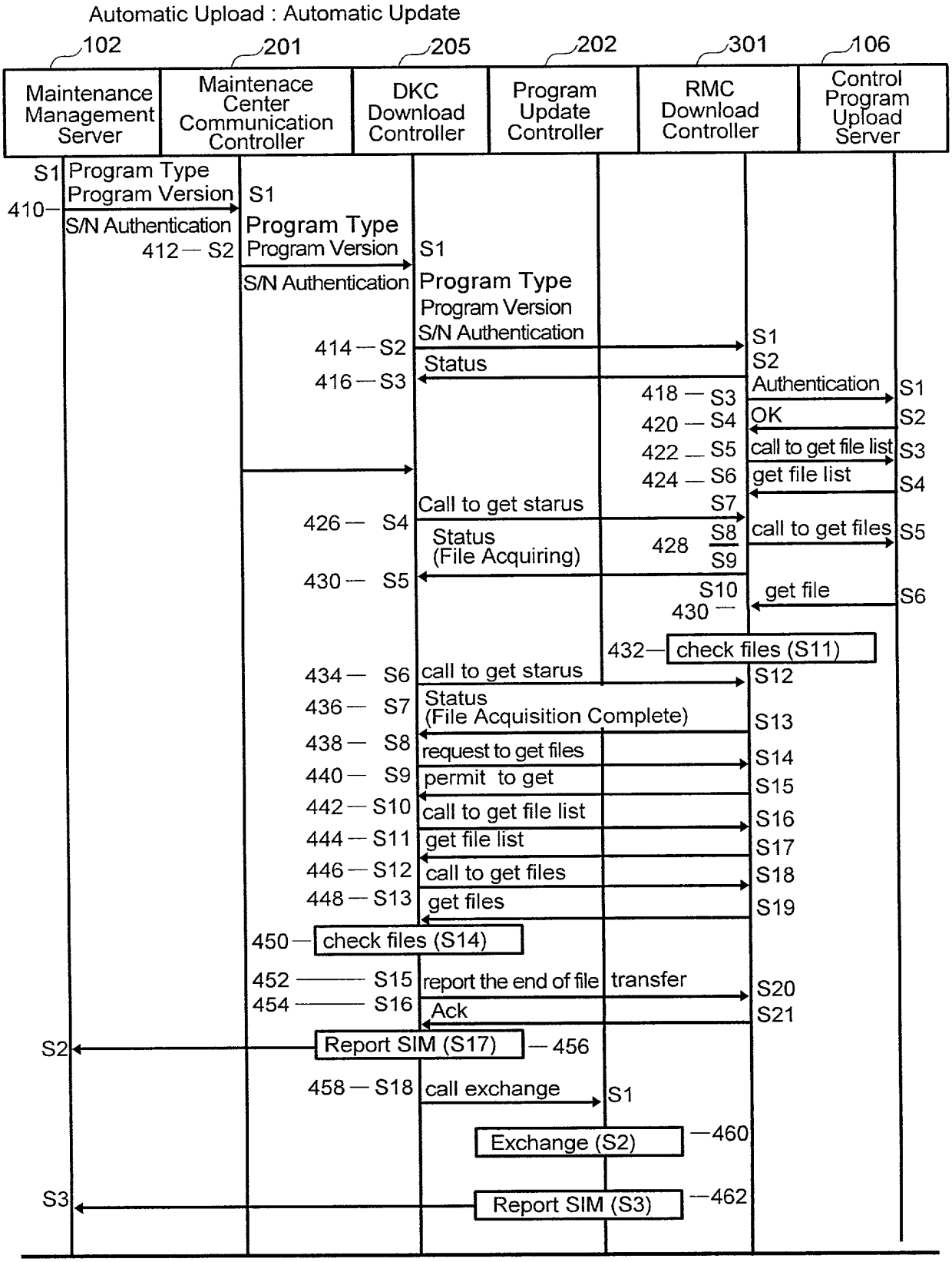

Automatic Upload : Automatic Update
102
201
205
202
301
106
Maintenance Management Server
Maintenace Center Communication Controller
DKC Download Controller
Program Update Controller
RMC Download Controller
Control Program Upload Server
S1
Program Type
Program Version
410
S/N Authentication
412 S2
414 S2
Status
416 S3
418 S3
Authentication
420 S4
OK
422 S5
call to get file list
424 S6
get file list
Call to get starus
426 S4
S7
Status (File Acquiring)
428
S8
S9
call to get files
430 S5
S10
430
get file
S6
432
check files (S11)
434 S6
call to get starus
S12
436 S7
Status (File Acquisition Complete)
S13
438 S8
request to get files
S14
440 S9
permit to get
S15
442 S10
call to get file list
S16
444 S11
get file list
S17
446 S12
call to get files
S18
448 S13
get files
S19
450
check files (S14)
452 S15
report the end of file
transfer
S20
454 S16
Ack
S21
S2
Report SIM (S17)
456
458 S18
call exchange
Exchange (S2)
460
S3
Report SIM (S3)
462

FIG.6

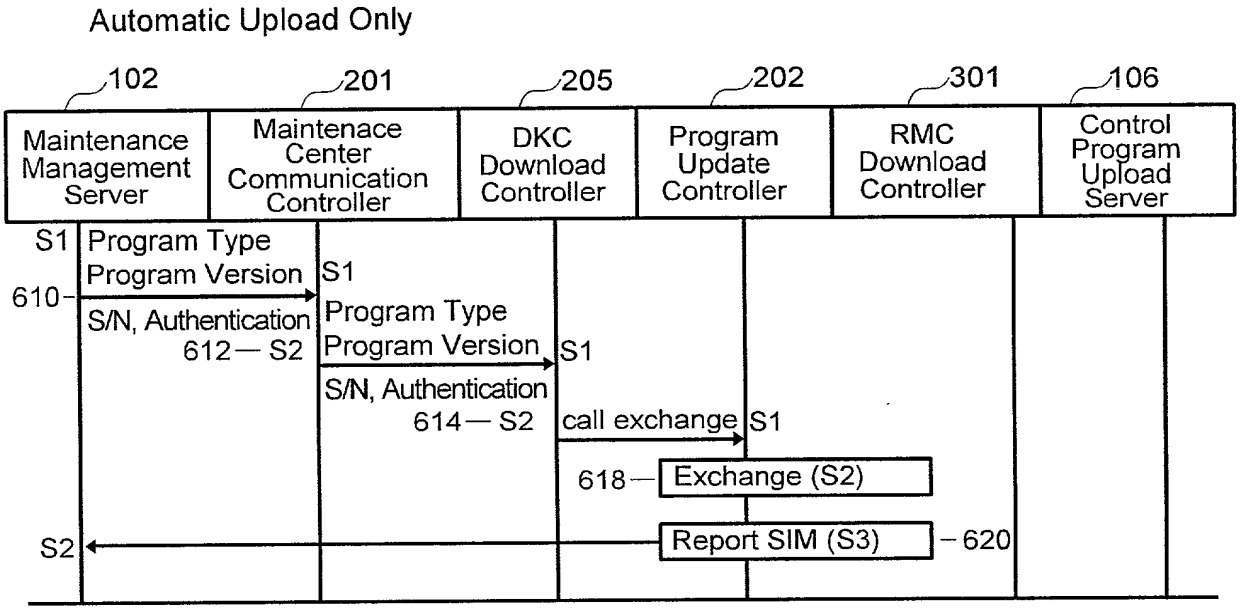

Automatic Upload Only
102
201
205
202
301
106
Maintenance Management Server
Maintenace Center Communication Controller
DKC Download Controller
Program Update Controller
RMC Download Controller
Control Program Upload Server
S1
Program Type
Program Version
610
S/N, Authentication
612 — S2
S1
Program Type
Program Version
S1
S/N, Authentication
614 — S2
call exchange
S1
618 —
Exchange (S2)
S2
Report SIM (S3)
620

FIG.7

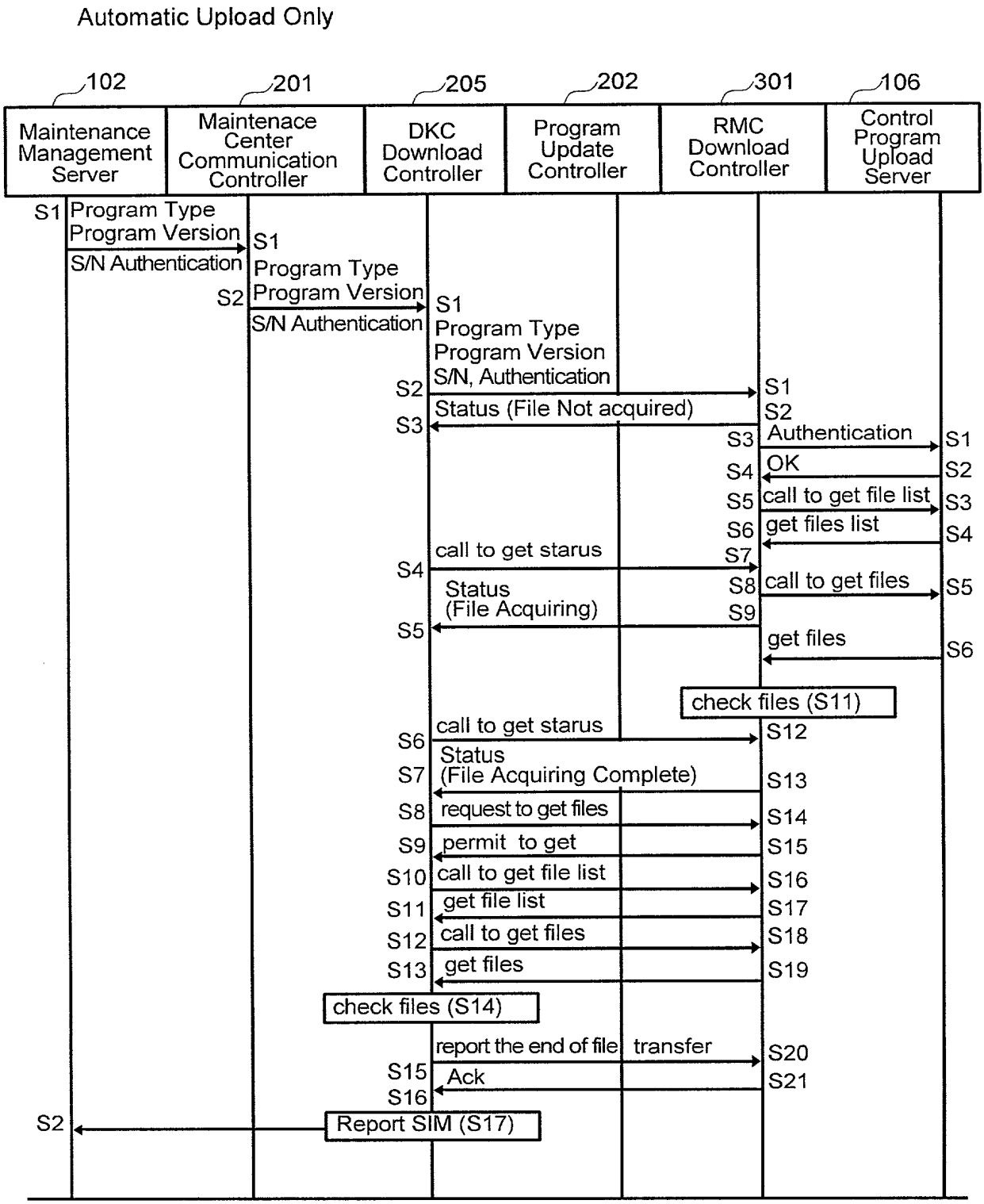

Automatic Upload Only
102
201
205
202
301
106
Maintenance Management Server
Maintenace Center Communication Controller
DKC Download Controller
Program Update Controller
RMC Download Controller
Control Program Upload Server
S1 Program Type Program Version S/N Authentication
S1 Program Type Program Version S/N Authentication
S2
S1 Program Type Program Version S/N, Authentication
S2
S1
Status (File Not acquired)
S2
S3
S3 Authentication
S1
S4 OK
S2
S5 call to get file list
S3
S6 get files list
S4
call to get starus
S7
S4
S8 call to get files
S5
Status (File Acquiring)
S9
S5
get files
S6
check files (S11)
call to get starus
S12
S6
Status (File Acquiring Complete)
S7
S13
S8 request to get files
S14
S9 permit to get
S15
S10 call to get file list
S16
S11 get file list
S17
S12 call to get files
S18
S13 get files
S19
check files (S14)
report the end of file transfer
S20
S15 Ack
S21
S16
S2
Report SIM (S17)

FIG.8

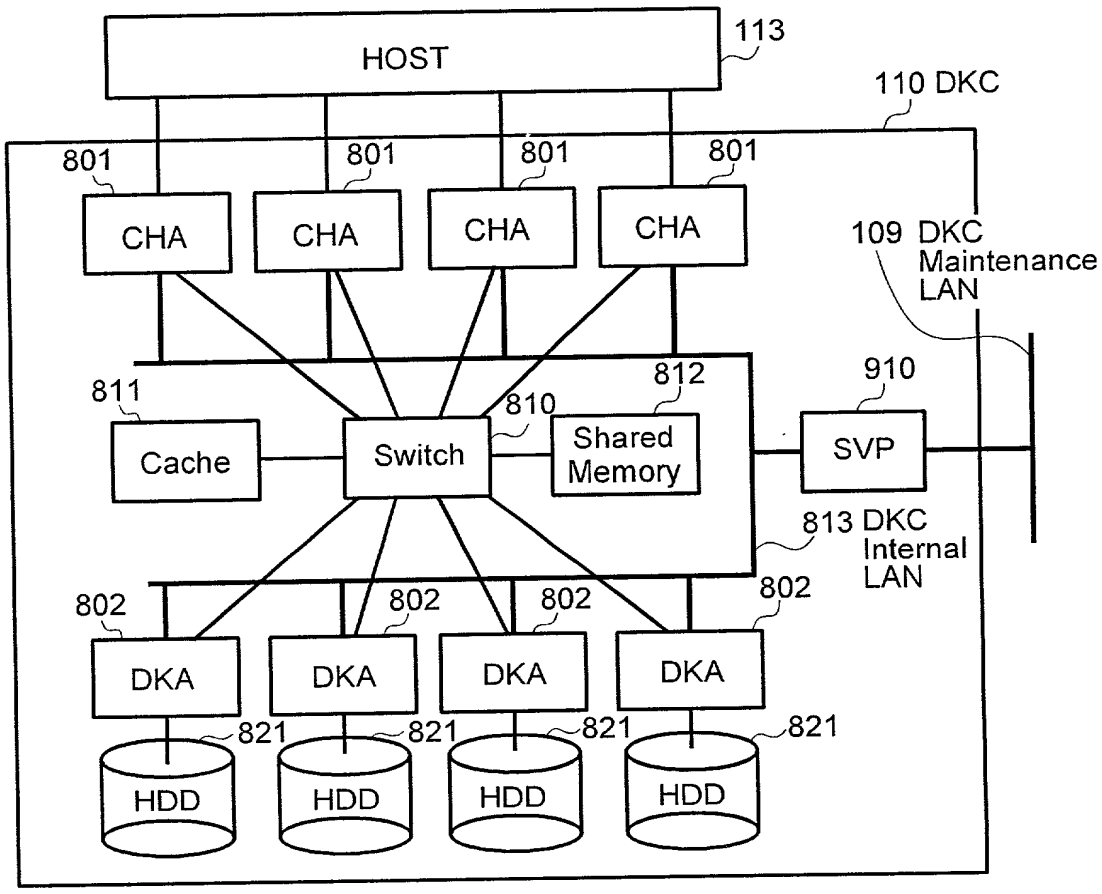

HOST
113
110 DKC
801
801
801
801
CHA
CHA
CHA
CHA
109 DKC
Maintenance
LAN
811
812
910
810
Cache
Switch
Shared
Memory
SVP
813 DKC
Internal
LAN
802
802
802
802
DKA
DKA
DKA
DKA
821
821
821
821
HDD
HDD
HDD
HDD

FIG.9

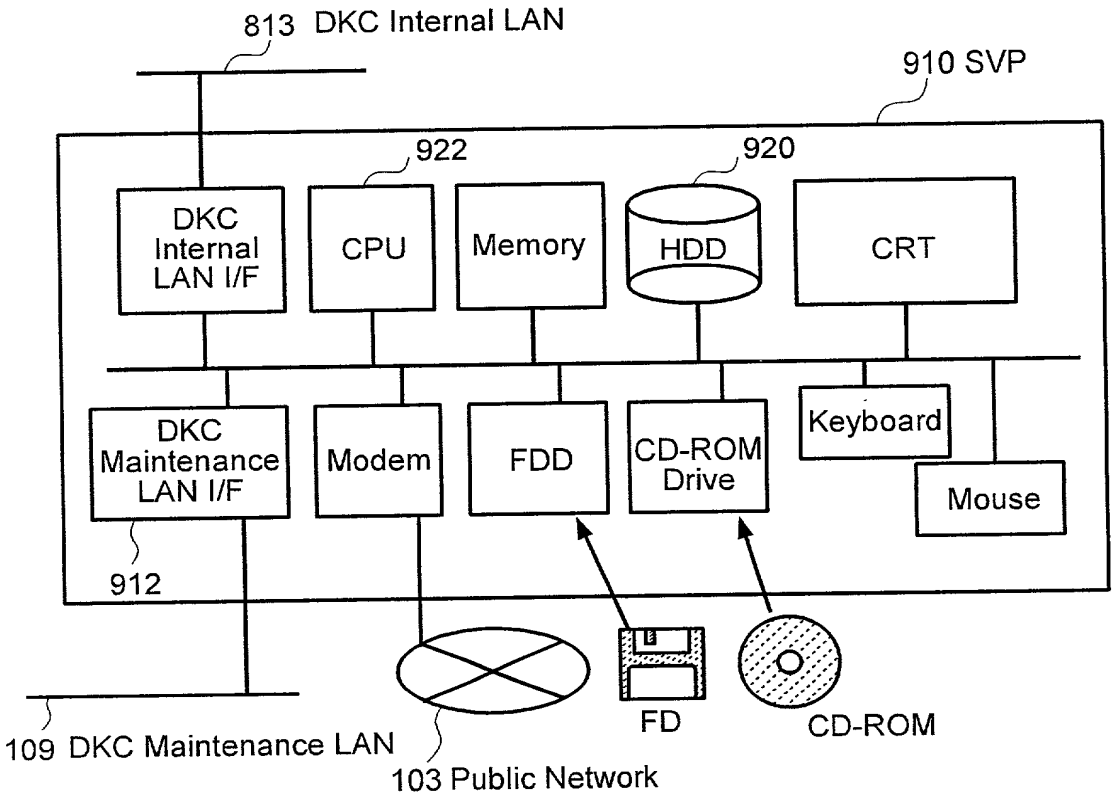

813 DKC Internal LAN
910 SVP
922
920
DKC Internal LAN I/F
CPU
Memory
HDD
CRT
DKC Maintenance LAN I/F
Modem
FDD
CD-ROM Drive
Keyboard
Mouse
912
FD
CD-ROM
109 DKC Maintenance LAN
103 Public Network

FIG.10

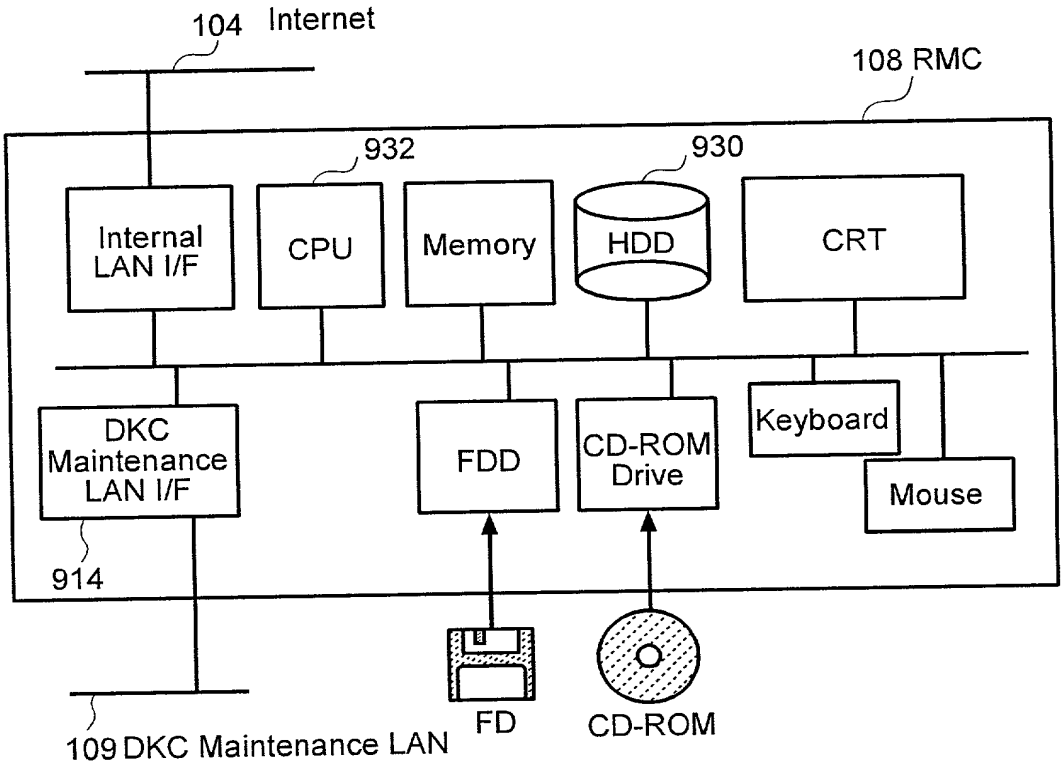

104 Internet
108 RMC
932
930
Internal LAN I/F
CPU
Memory
HDD
CRT
DKC Maintenance LAN I/F
FDD
CD-ROM Drive
Keyboard
Mouse
914
FD
CD-ROM
109 DKC Maintenance LAN

FIG.11

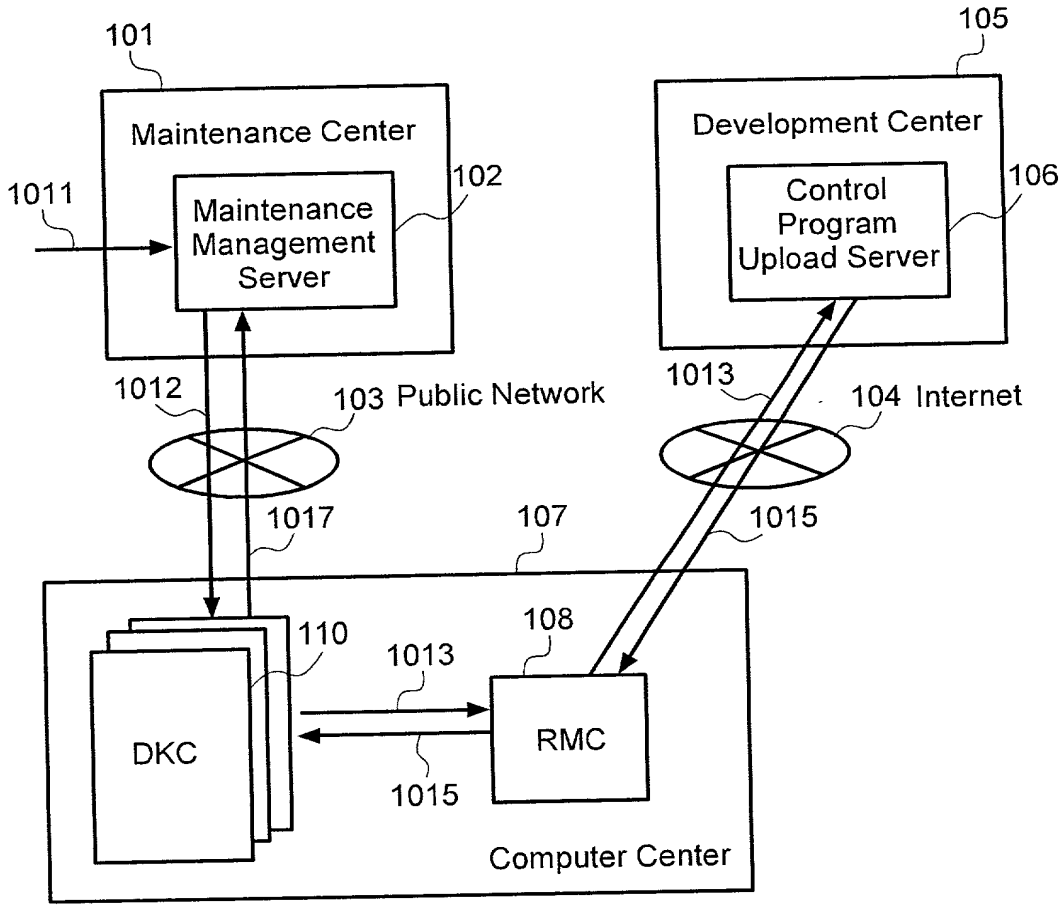

101
Maintenance Center
1011
Maintenance Management Server
102
105
Development Center
Control Program Upload Server
106
1012
103 Public Network
1013
104 Internet
1017
107
1015
110
108
1013
DKC
RMC
1015
Computer Center

FIG.12

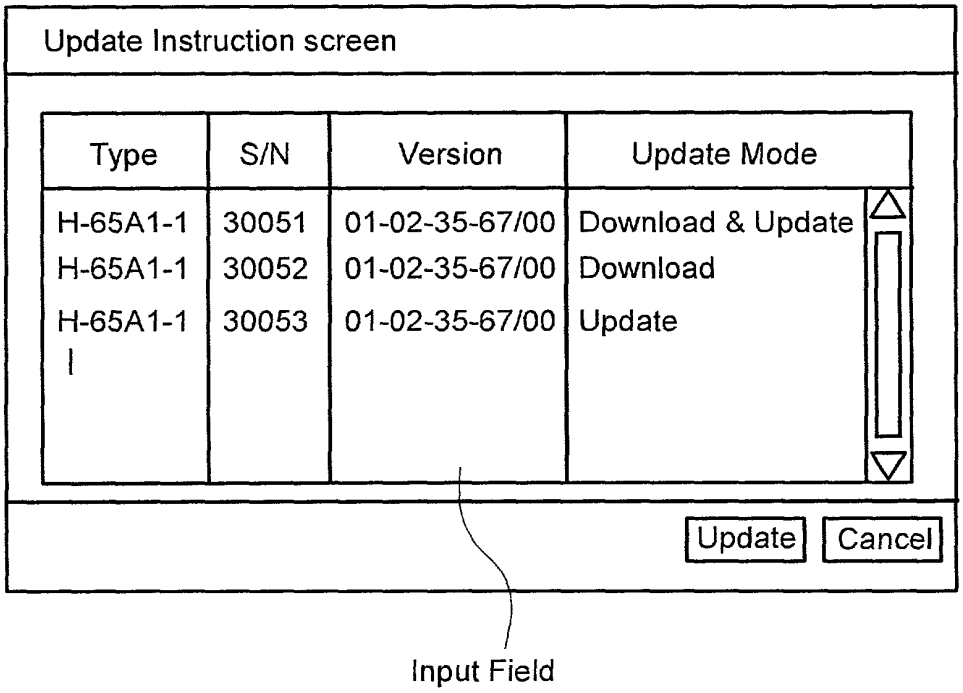

Update Instruction screen
Type
S/N
Version
Update Mode
H-65A1-1
30051
01-02-35-67/00
Download & Update
H-65A1-1
30052
01-02-35-67/00
Download
H-65A1-1
30053
01-02-35-67/00
Update
Update
Cancel
Input Field

FIG.13

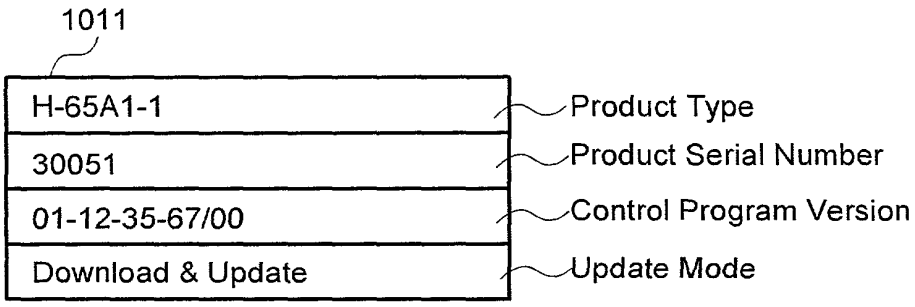

1011
H-65A1-1
Product Type
30051
Product Serial Number
01-12-35-67/00
Control Program Version
Download & Update
Update Mode

FIG.14

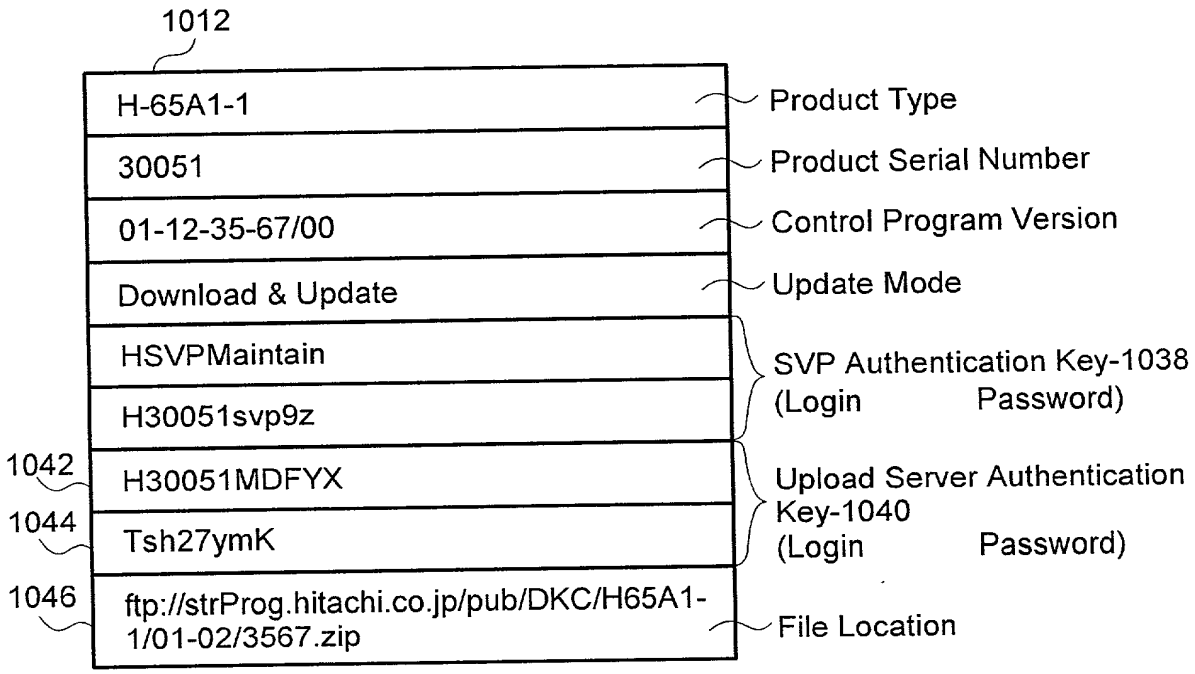

1012
H-65A1-1
Product Type
30051
Product Serial Number
01-12-35-67/00
Control Program Version
Download & Update
Update Mode
HSVPMaintain
H30051svp9z
SVP Authentication Key-1038
(Login Password)
1042
H30051MDFYX
1044
Tsh27ymK
Upload Server Authentication
Key-1040
(Login Password)
1046
ftp://strProg.hitachi.co.jp/pub/DKC/H65A1-1/01-02/3567.zip
File Location

FIG.15

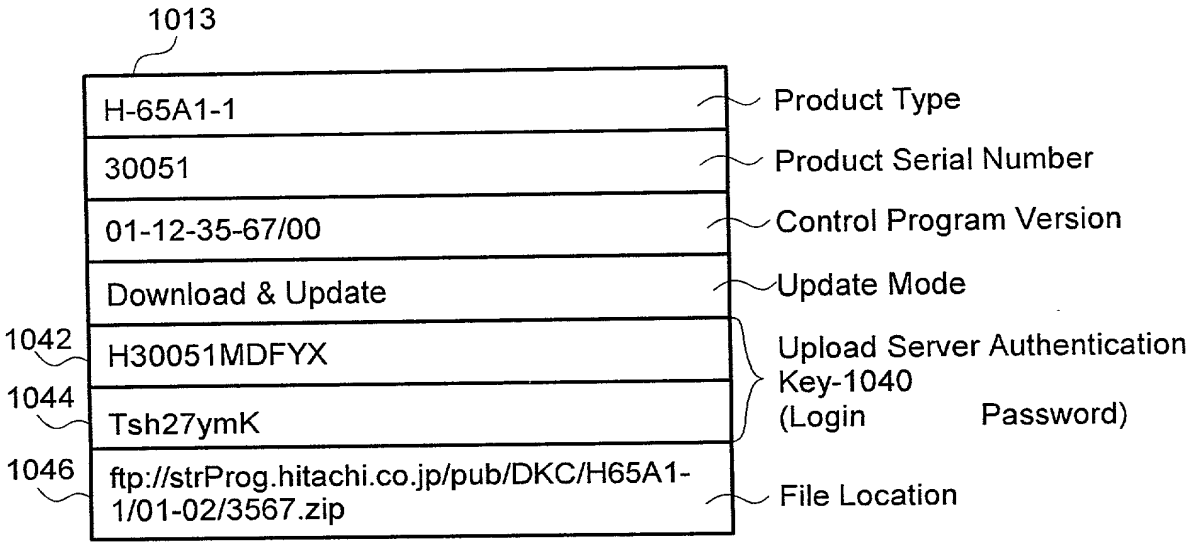

1013
H-65A1-1
Product Type
30051
Product Serial Number
01-12-35-67/00
Control Program Version
Download & Update
Update Mode
1042
H30051MDFYX
1044
Tsh27ymK
Upload Server Authentication
Key-1040
(Login Password)
1046
ftp://strProg.hitachi.co.jp/pub/DKC/H65A1-1/01-02/3567.zip
File Location

FIG.16

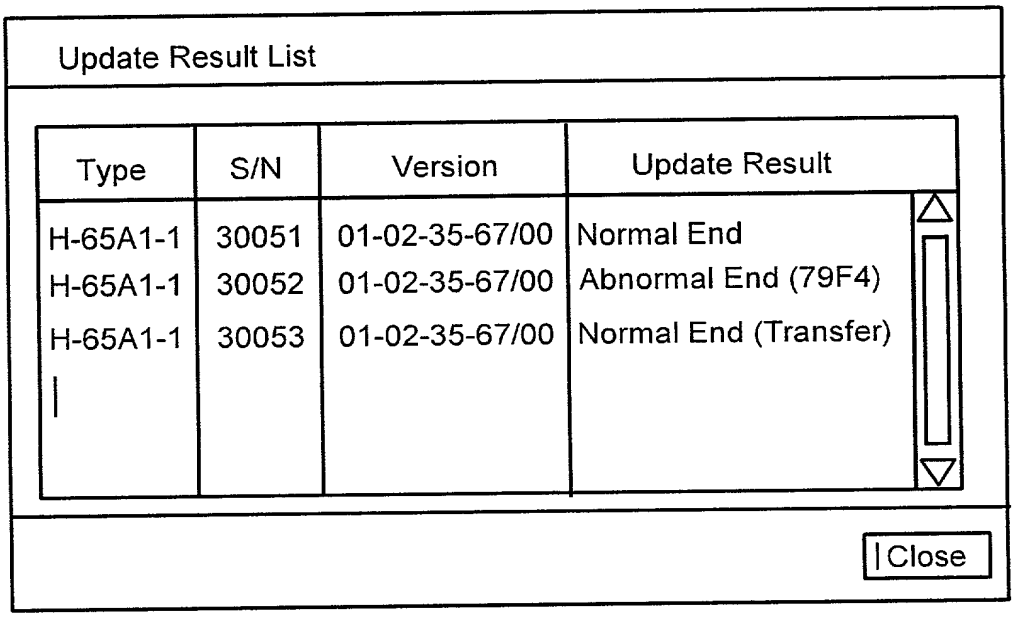

Update Result List
Type
S/N
Version
Update Result
H-65A1-1
30051
01-02-35-67/00
Normal End
H-65A1-1
30052
01-02-35-67/00
Abnormal End (79F4)
H-65A1-1
30053
01-02-35-67/00
Normal End (Transfer)
Close

FIG.17

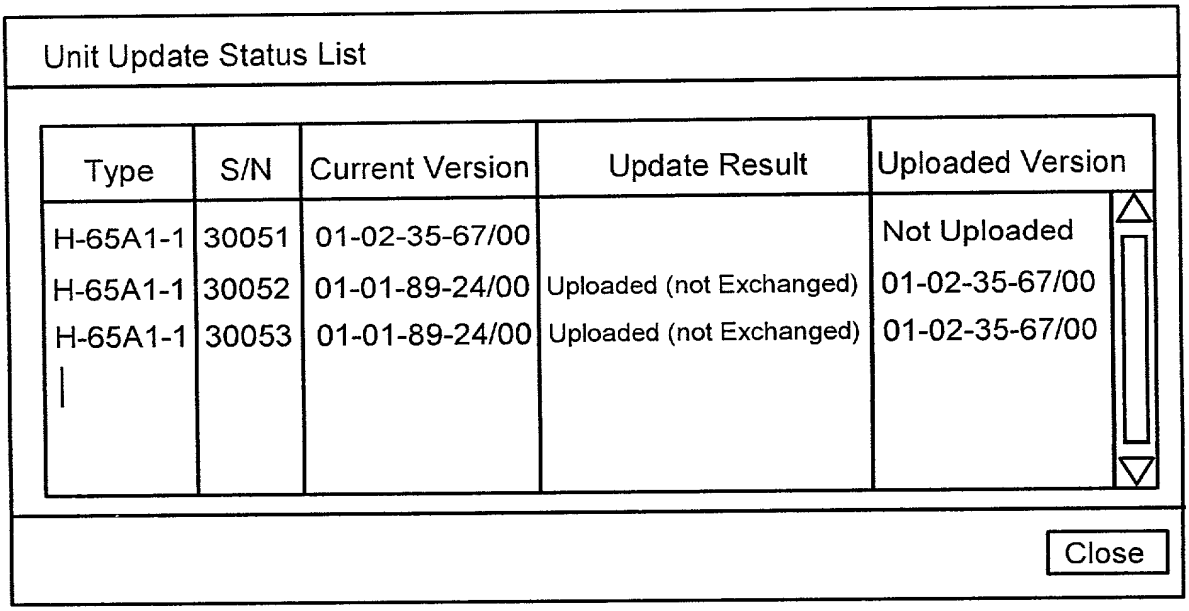

Unit Update Status List
Type
S/N
Current Version
Update Result
Uploaded Version
H-65A1-1
30051
01-02-35-67/00
Not Uploaded
H-65A1-1
30052
01-01-89-24/00
Uploaded (not Exchanged)
01-02-35-67/00
H-65A1-1
30053
01-01-89-24/00
Uploaded (not Exchanged)
01-02-35-67/00
Close

FIG.18

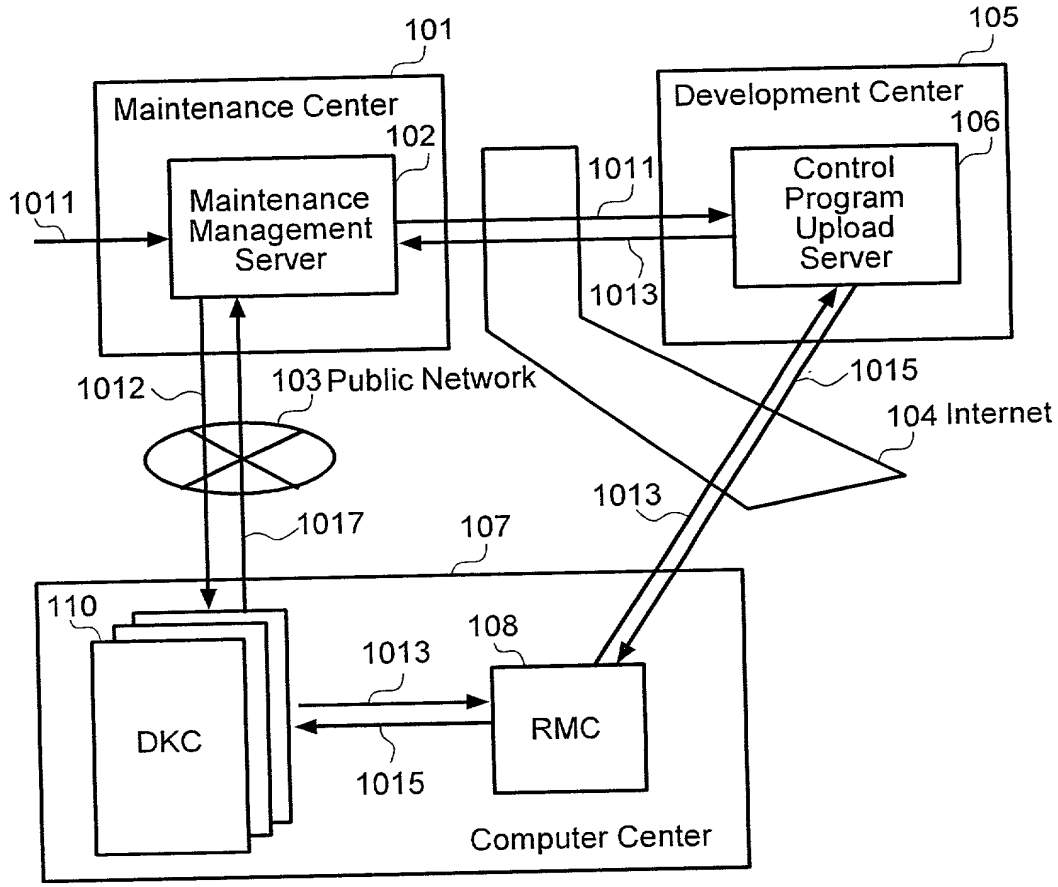

101
Maintenance Center
102
Maintenance Management Server
1011
105
Development Center
106
Control Program Upload Server
1011
1013
1012
103 Public Network
1015
104 Internet
1013
1017
107
110
DKC
1013
108
RMC
1015
Computer Center

FIG.19

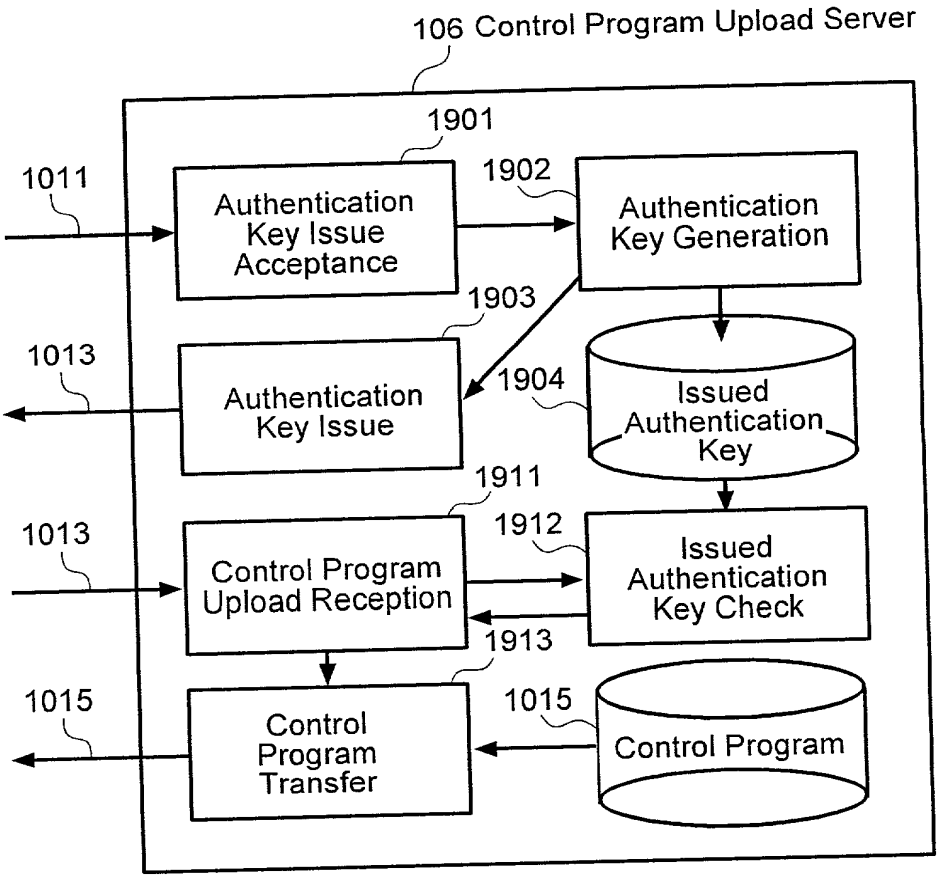

106 Control Program Upload Server
1901
1011
Authentication Key Issue Acceptance
1902
Authentication Key Generation
1903
1013
Authentication Key Issue
1904
Issued Authentication Key
1911
1013
Control Program Upload Reception
1912
Issued Authentication Key Check
1913
1015
Control Program Transfer
1015
Control Program

FIG.20

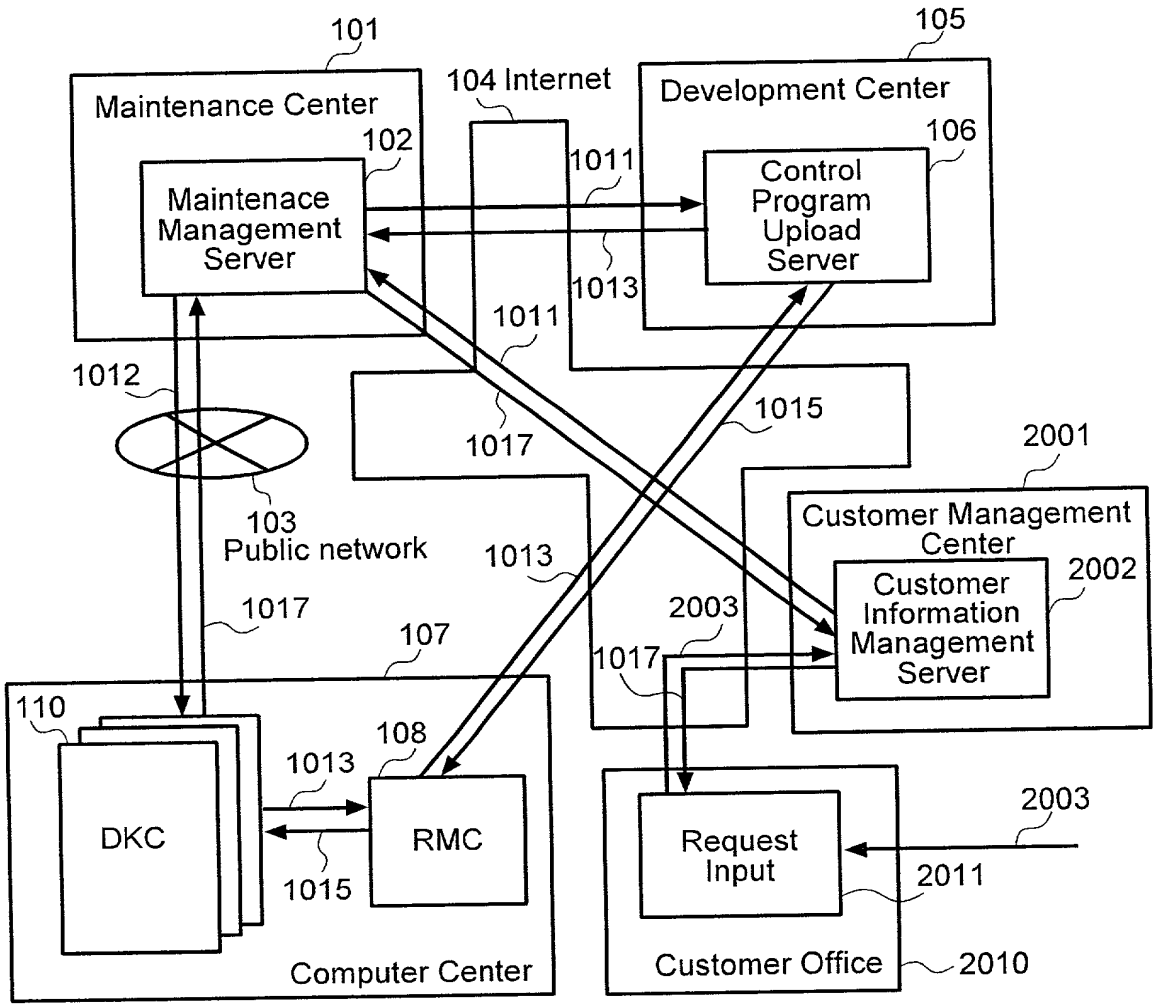

101
Maintenance Center
102
Maintenace Management Server
104 Internet
105
Development Center
106
Control Program Upload Server
1011
1013
1011
1012
1017
1015
2001
Customer Management Center
2002
Customer Information Management Server
2003
1017
103
Public network
1013
1017
107
110
108
1013
DKC
RMC
1015
Computer Center
2003
Request Input
2011
Customer Office
2010

FIG.21

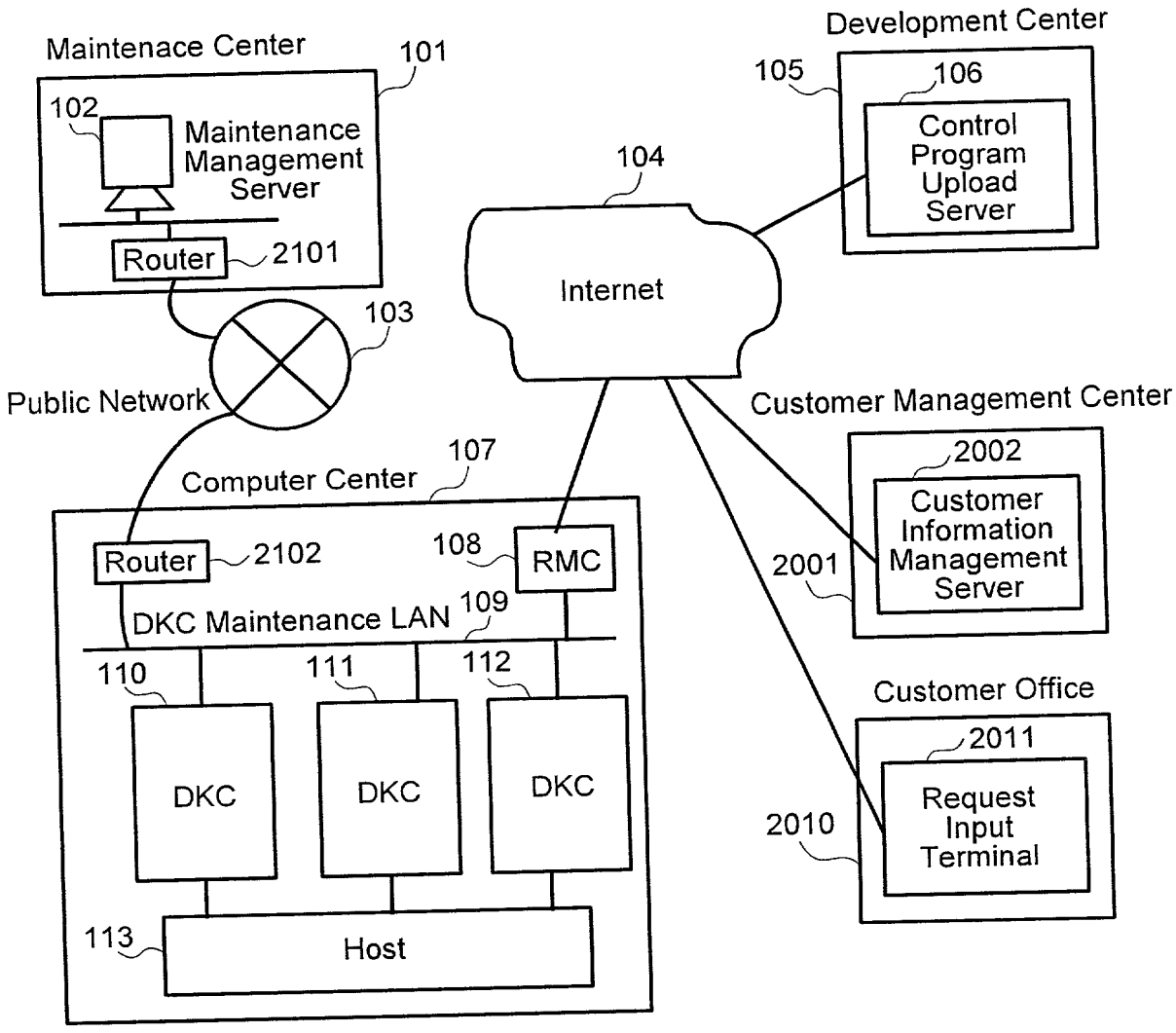

Maintenace Center
101
102
Maintenance Management Server
Router
2101
103
Public Network
Development Center
105
106
Control Program Upload Server
104
Internet
Customer Management Center
2002
Customer Information Management Server
2001
Customer Office
2011
Request Input Terminal
2010
Computer Center
107
Router
2102
108
RMC
DKC Maintenance LAN
109
110
111
112
DKC
DKC
DKC
113
Host

FIG.22

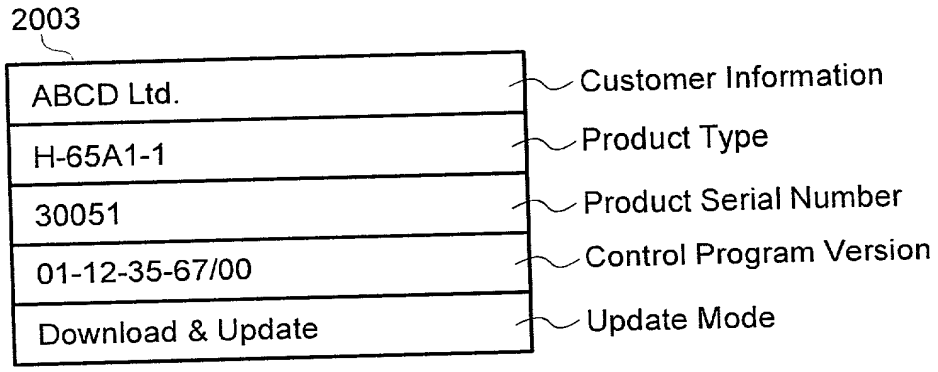

2003
ABCD Ltd.
H-65A1-1
30051
01-12-35-67/00
Download & Update
Customer Information
Product Type
Product Serial Number
Control Program Version
Update Mode

FIG.23

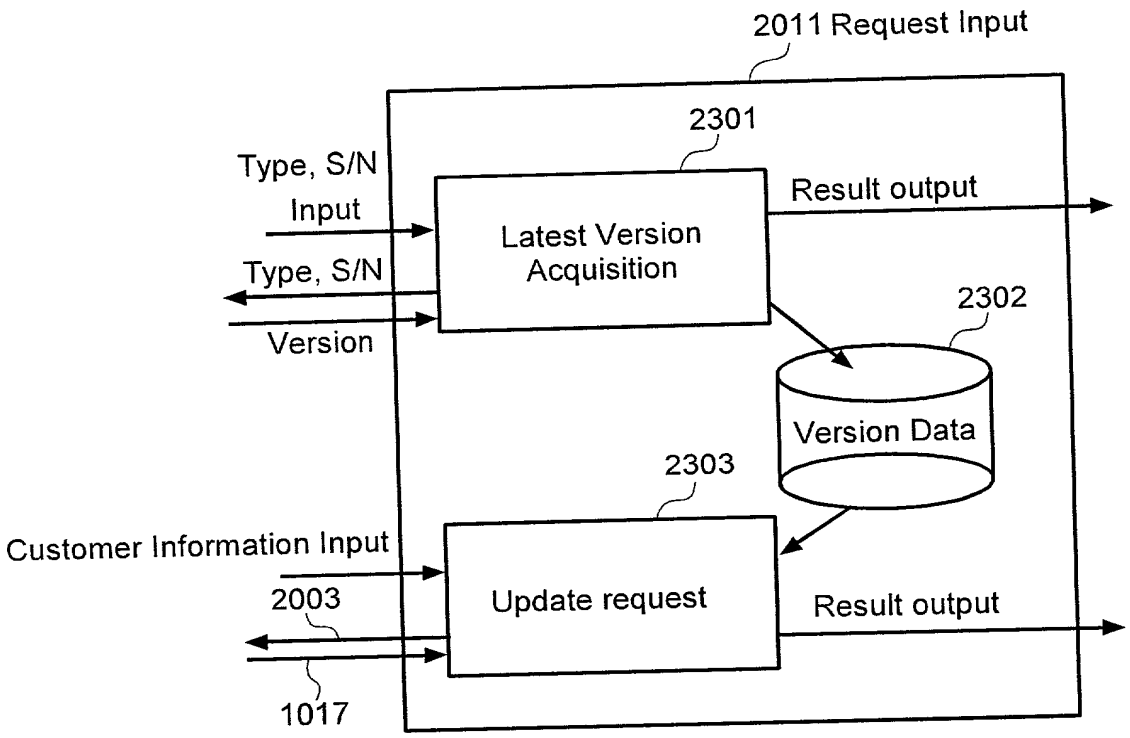

2011 Request Input
2301
Type, S/N
Input
Type, S/N
Version
Latest Version
Acquisition
Result output
2302
Version Data
2303
Customer Information Input
2003
1017
Update request
Result output

FIG.24

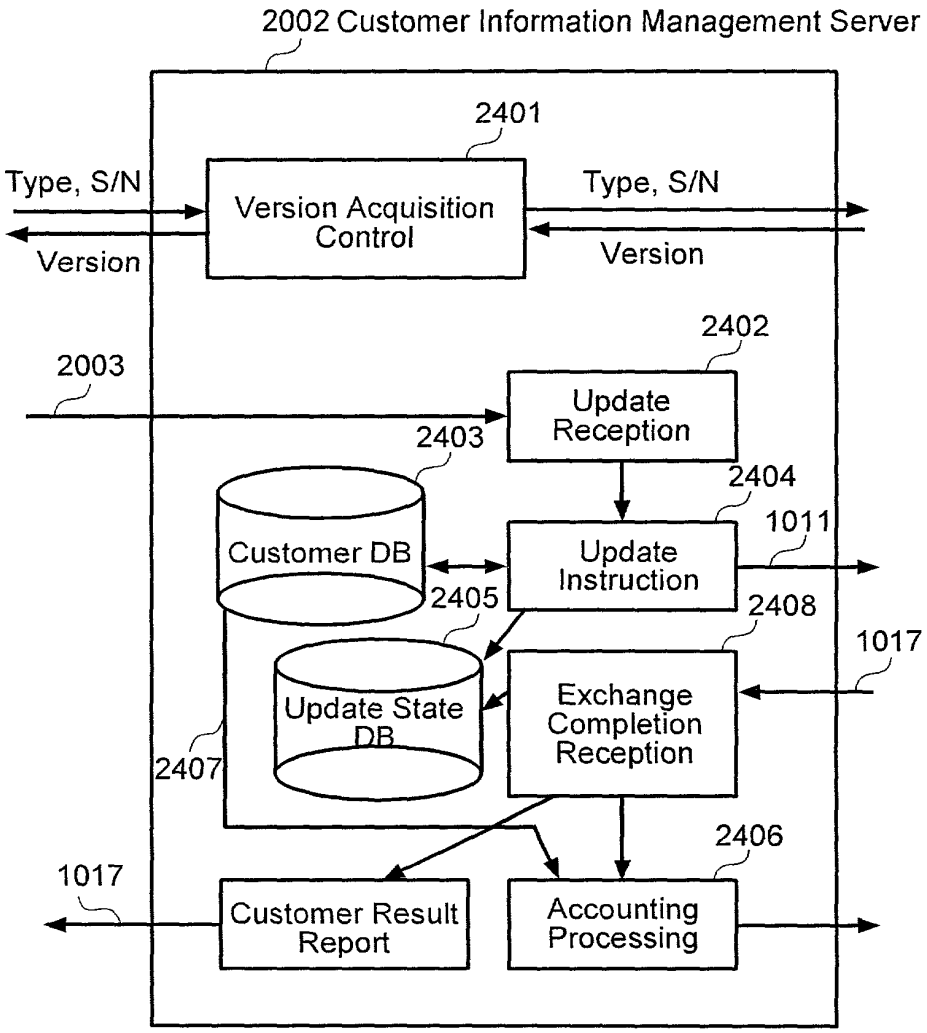

2002 Customer Information Management Server
2401
Type, S/N
Version Acquisition Control
Type, S/N
Version
Version
2402
2003
Update Reception
2403
2404
1011
Customer DB
Update Instruction
2405
2408
1017
Update State DB
Exchange Completion Reception
2407
2406
1017
Customer Result Report
Accounting Processing

FIG.25

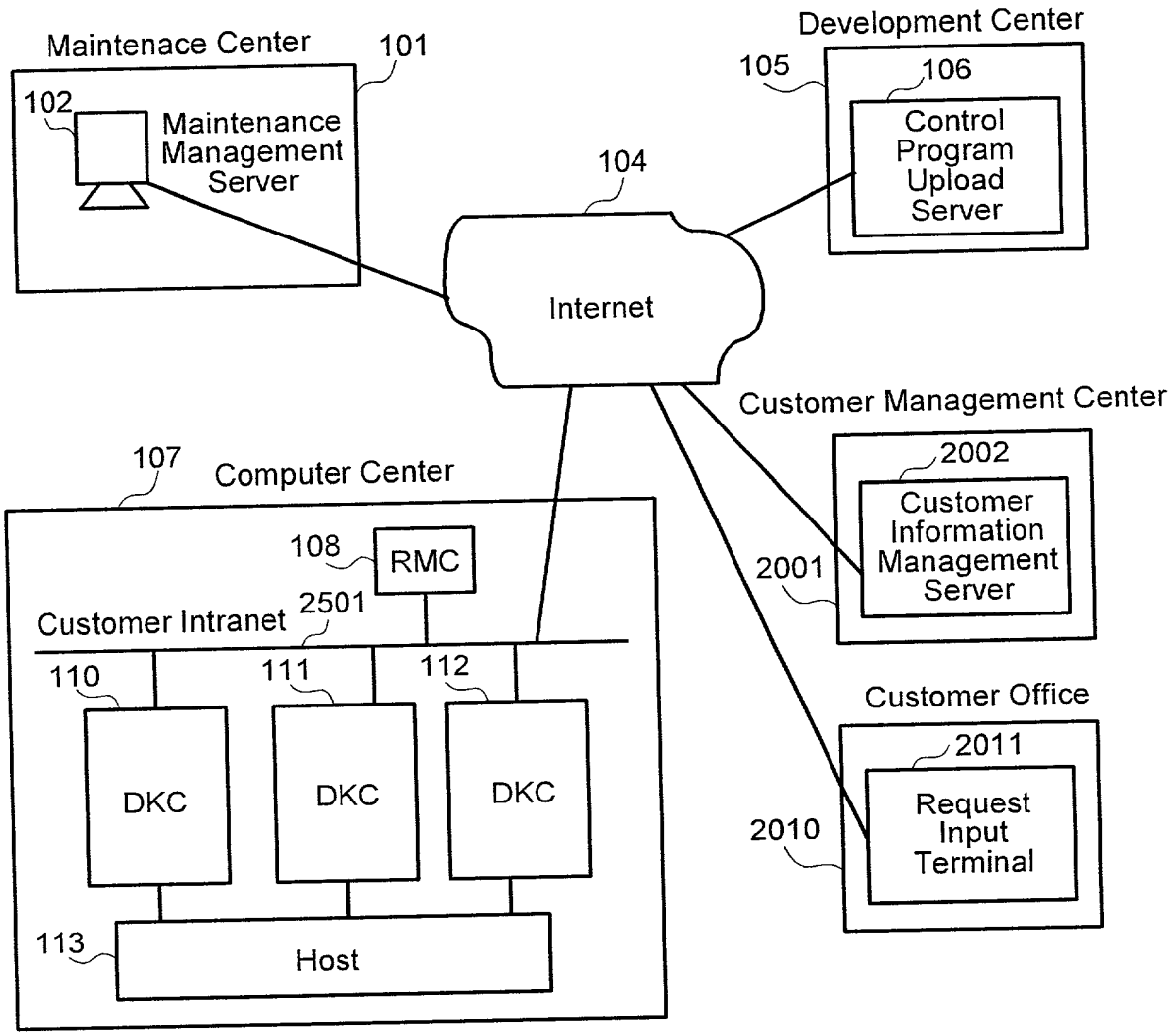

Maintenace Center
101
102
Maintenance Management Server
Development Center
105
106
Control Program Upload Server
104
Internet
Customer Management Center
2002
Customer Information Management Server
2001
107
Computer Center
108
RMC
Customer Intranet
2501
110
111
112
DKC
DKC
DKC
113
Host
Customer Office
2011
Request Input Terminal
2010

FIG.26

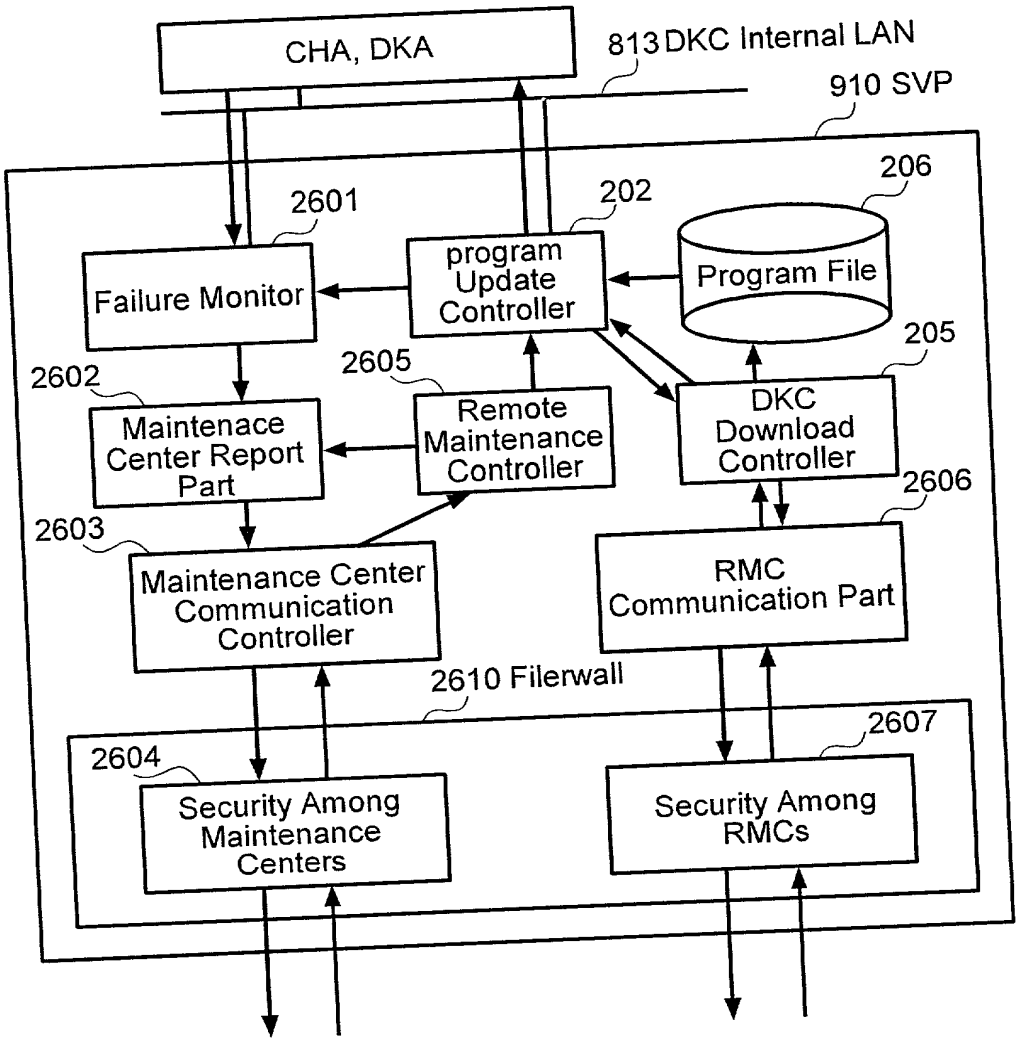
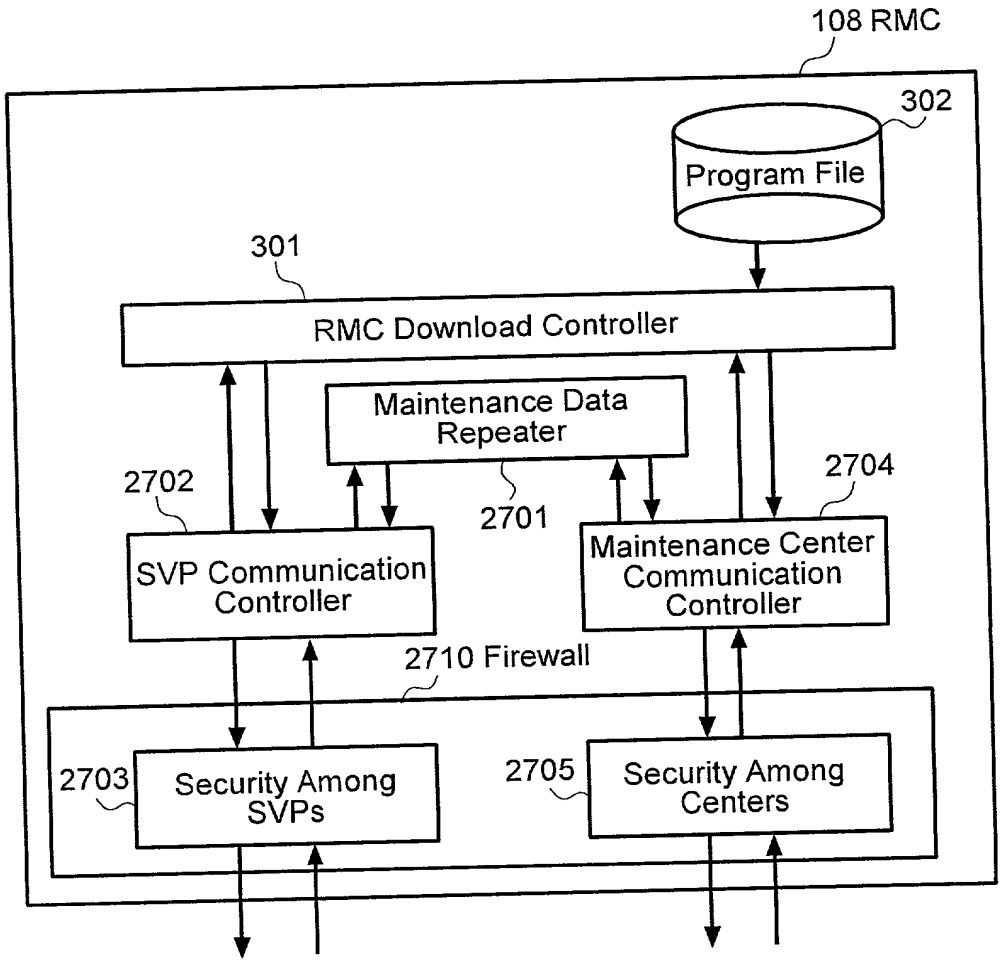

CHA, DKA
813 DKC Internal LAN
910 SVP
2601
202
206
Failure Monitor
program Update Controller
Program File
205
2602
2605
Maintenace Center Report Part
Remote Maintenance Controller
DKC Download Controller
2606
2603
Maintenance Center Communication Controller
RMC Communication Part
2610 Filerwall
2607
2604
Security Among Maintenance Centers
Security Among RMCs

FIG.27


108 RMC
302
Program File
301
RMC Download Controller
Maintenance Data Repeater
2701
2702
SVP Communication Controller
2704
Maintenance Center Communication Controller
2710 Firewall
2703
Security Among SVPs
2705
Security Among Centers